

Suggested Reference Materials:

NFPA 1911, *Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus*, National Fire Protection Association (800) 344-3555 or www.nfpa.org

Meritor Preventive Maintenance and Lubrication MM1. Sections 4 and 6 Download the Meritor documents for no charge at: <http://graphicvillage.org/meritor/MM1.pdf>

Changes in Diesel Fuel - The Service Technician's Guide To Compression Ignition Fuel Quality - can be downloaded for no charge at http://www.biodiesel.org/docs/ffs-performance_usage/service-technician's-guide-to-diesel-fuel.pdf?sfvrsn=4

Selective Catalytic Reduction <http://www.dieselforum.org/about-clean-diesel/what-is-scr>

Any **chassis manufacturer's service manual** or **college level automotive textbook**.

LEARNING OBJECTIVES

1. Definitions
 - a. Class 1 leak
 - b. Class 2 leak
 - c. Class 3 leak
 - d. diagnostic check
 - e. AHJ-Authority Having Jurisdiction
 - f. NFPA-National Fire Protection Association
 - g. Shall/Should
 - h. API-American Petroleum Institute
 - i. Preventive Maintenance
 - j. DPF-Diesel Particulate Filter
 - k. Cetane rating
 - l. Hypoid
 - m. Out of service (OOS)
 - n. Cloud point
 - o. Flash point
 - p. Inspection
 - q. PSIA-Pounds Per Square Inch Absolute
 - PSIG-Pounds Per Square Inch Gauge
 - r. Interlock
 - s. CCA-Cold Cranking Amp
 - t. DEF-Diesel Exhaust Fluid - Urea
 - u. SCR-Selective Catalyst Reduction
 - v. Battery SOH
 - w. Chemical Components of Diesel Exhaust (harmful emissions)
 - x. Lubricity
 - y. Biocide
 - z. Deficiency
 - aa. OBD II
 - bb. DTC
 - cc. DLC
 - dd. DOC
 - ee. MIL illumination
 - ff. Synthetic & petroleum based oil
 - gg. Major repairs
2. General Requirements
 - a. Inspection intervals
 - b. Documentation
 - c. Operational Tests
 - d. NFPA 1071 Technician Qualification Standard
 - e. Changes in Diesel Fuel - see reference materials list
 - (1) sulfur limits
 - (2) ASTM-American Society for Testing & Materials
 - (3) EPA-Environmental Protection Agency
 - (4) Exhaust Systems
 - (5) Exhaust system after treatments such as
 - SCR-Selective Catalytic Reduction
 - SCC-Storage Catalytic Converter
 - DPF-Diesel Particulate Filter
 - (6) Fuel filter contamination
 - (7) Premium diesel
 - (8) Care & handling of DEF
 - (9) Exhaust system warning lights
 - f. Retirement of Emergency Vehicles
 - g. Safety
3. Out of Service Criteria
 - a. Tires and wheels
 - (1) Minimum tread depth
 - (2) Tire Defects
 - (3) Wheel defects
 - b. Air Brakes
 - (1) Leak Down Test
 - (2) Low air indicator
 - c. Identification of out-of-service components or systems
 - d. Class 1, 2 & 3 leaks
 - e. Windshield cracks
 - f. Seat belts
 - g. Engines
 - (1) Exhaust Leaks
 - (2) Engine oil leak
 - (3) Coolant contamination
 - (4) Fuel leak
 - (5) Coolant leak
 - (6) Fuel filter Contamination
 - h. Warning Lights
 - (1) Anti lock brake system(ABS) lamp
 - (2) Brake warning lamp
 - i. Heating Ventilation Air Conditioning(HVAC)
 - j. Chassis, Steering & Suspension
 - k. Patient Compartment
4. Inspection, Diagnostic Checks and Maintenance
 - a. Chassis and Body
 - (1) Latch/Hinge lubrication
 - (2) Axles, Tires, & Wheels
 - (a) Tire age
 - (b) Tire wear patterns
 - (c) Dept of Transportation(DOT) Code (tire)
 - (d) Fastener torque
 - (e) Pressure check
 - (f) Drive Axle
 - (g) Wheel Bearings
 - (h) Tire balance
 - (i) Tread depth
 - (3) Welding procedure
 - (4) Drive train
 - (a) Drive line
 - (i) lubrication
 - (ii) vibration causes
 - (iii) end play
 - (b) Drive Shaft
 - (5) Frame fasteners
 - (6) Diagnostic checks
 - (7) Vibration Diagnosis
 - (8) Suspension components
 - (a) shock absorber type
 - (9)Steering System
 - (10) Patient Compartment

- b. Brakes
 - (1) Uneven brake wear
 - (2) Oil contaminated air system
 - (3) Brake fluid level
 - (4) Power assist

- (5) Types of brake fluid
- (6) Auto slack adjusters
- (7) Air pressure warning
- (8) Air system pressure recovery time
- (9) Antilock braking system
 - (a) Leak-down rate
- (10) Air operated accessories

- c. Engine
 - (1) Noises
 - (2) Oil
 - (a) leaks
 - (b) change intervals & procedures
 - (c) requirements
 - (d) types
 - (e) motor oil function
 - (3) Cooling system maintenance
 - (4) Diagnostic trouble codes
 - (5) Coolant pH
 - (6) SCA (supplemental coolant additive)

- (7) Coolant type
 - (a) Organic Acid Technology (OAT)
 - (b) Hybrid Organic Acid Technology (HOAT)
 - (c) G-05-Trade names of HOAT coolants
 - (d) Inorganic Acid Technology(IAT)
- (8) Diesel fuel
- (9) Air filter restriction gauge
- (10) High idle control
- (11) Fan Clutch
- (12) Exhaust outlet location

- d. Electrical Systems
 - (1) Low Voltage
 - (a) Warning Devices
 - (2) Battery voltage & checks
 - (3) Charging system checks
 - (4) Charge protect high idle operation
 - (a) Electrolyte
 - (b) Conditioner charger

- (5) Radio Frequency (RF) grounding
- (6) Bulb replacement
- (7) Siren
- (8) Primary/Secondary pump operation
- (9) Inverter
- (10) Interior lighting

- e. Maintenance
 - (1) Severe Service
 - (2) Intervals
 - (3) Procedures

- f. Transmission
 - (1) Mounting
 - (2) Controls
 - (3) Types of fluid

- (4) Temperature
- (5) Procedure
- (6) Fuel System
- (7) fuel filter replacement
- (8) Fuel additives

- g. Motor vehicle inspection laws
- h. Steering
 - (1) free play
- i. Supplemental restraint systems

- 5. Road Test
 - a. Speed
 - (1) Minimum top speed
 - b. Duration
 - c. Frequency
 - d. Weight test
 - e. Braking System
 - (1) Pedal pulse
 - (2) Hand pedal
 - (3) Hydraulic brake release
 - (4) Warning Lamps

- f. Road conditions
- g. Air brakes
 - (1) Brake pull
 - (2) Brake release
- h. Drive train noise and vibration
- i. Steering center
- j. Steering Effort
- k. Stopping Distance
- l. Trans Shifting
- m. Drifting/pulling
- n. Spinning tires
 - (1) differential damage

- 6. Performance Testing
 - a. Low Voltage system
 - (1) Battery testing
 - (a) Conductance
 - (b) Load test
 - (c) Cold Cranking Amps (CCA)
 - (2) Alternator test
 - (3) Testing frequency
 - (4) Starter wiring test

- b. Line voltage electrical systems
 - (1) Polarity
 - (2) Inverter
 - (a) Load test
 - (3) Shoreline